

Suppressions of serotonin-induced increased vascular permeability and leukocyte infiltration by *Bixa orellana* leaf extract

Abstract

The aim of the present study was to evaluate the anti-inflammatory activities of aqueous extract of *Bixa orellana* (AEBO) leaves and its possible mechanisms in animal models. The anti-inflammatory activity of the extract was evaluated using serotonin-induced rat paw edema, increased peritoneal vascular permeability, and leukocyte infiltrations in an air-pouch model. Nitric oxide (NO), indicated by the sum of nitrites and nitrates, and vascular growth endothelial growth factor (VEGF) were measured in paw tissues of rats to determine their involvement in the regulation of increased permeability. Pretreatments with AEBO (50 and 150 mg kg⁻¹) prior to serotonin inductions resulted in maximum inhibitions of 56.2% of paw volume, 45.7% of Evans blue dye leakage in the peritoneal vascular permeability model, and 83.9% of leukocyte infiltration in the air-pouch model. 57.2% maximum inhibition of NO and 27% of VEGF formations in rats' paws were observed with AEBO at the dose of 150 mg kg⁻¹. Pharmacological screening of the extract showed significant ($P < 0.05$) anti-inflammatory activity, indicated by the suppressions of increased vascular permeability and leukocyte infiltration. The inhibitions of these inflammatory events are probably mediated via inhibition of NO and VEGF formation and release.

Keyword: *Bixa orellana*; *Bixa orellana* leaf; Anti-inflammatory activity; Serotonin; Vascular permeability